

# REFLECTION TYPE LIQUID CRYSTAL DISPLAY DEVICE

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**Applicant:** CITIZEN WATCH CO LTD

**Classification:**

**- international:** **G02F1/1335; G02F1/13357; G02F1/13;** (IPC1-7): G02F1/1335;  
G02F1/1335

**- European:**

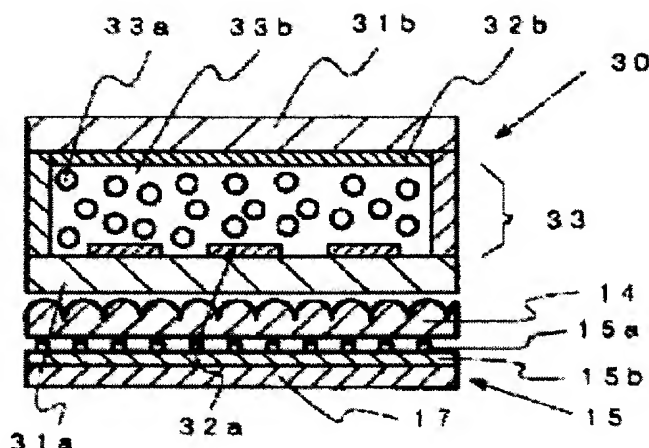
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## Abstract of JP10301108

**PROBLEM TO BE SOLVED:** To obtain a high contrast ratio by low voltage driving by using a scattering type liquid crystal display mode by providing a microlens array and a selective optical reflecting member on a side opposed to an observer to a liquid crystal display element. **SOLUTION:** The microlens array 14 condensing light transmitted through the liquid crystal display element 30 and the selective optical reflecting member 15 provided on the back of the microlens array 14 are provided on the side (rear side) opposed to the observer to the liquid crystal display element 30. The selective optical reflecting member 15 is constituted of a high optical reflecting part 15a reflecting or scattering the light condensed in a specified range by the microlens array 14 and a low optical reflecting part 15b absorbing the light other than that. Then, in the case that a liquid crystal layer 33 is in a transmissible state, reflected light from the high optical reflecting part 15a reaches the observer, so that white display is obtained, and in the case that the liquid crystal layer 33 is made in a scattering state, the major part of illuminating light does not reach the observer, so that black display is obtained. As a result, clear black and white display having the high contrast ratio is realized.



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